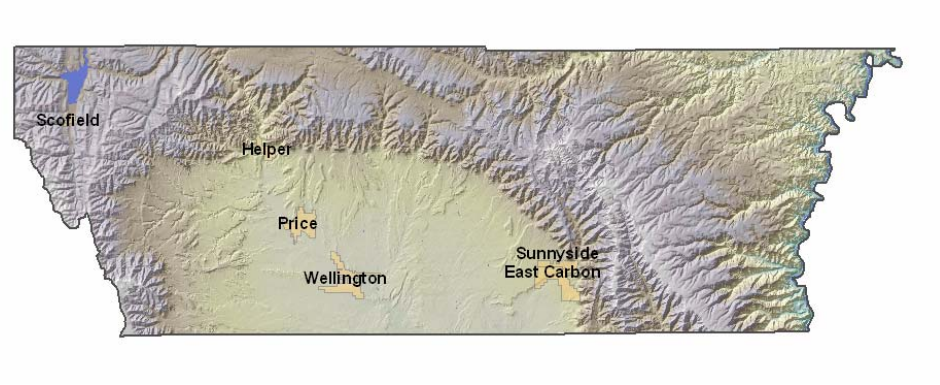
This resource assessment is designed to gather and display information specific to Carbon County, Utah. This report will highlight the natural and social resources present in the county, detail specific concerns, and be used to aid in resource planning and target conservation assistance needs. This document is dynamic and will be updated as additional information is available through a multi-agency partnership effort. The general observations and summaries are listed first, followed by the specific resource inventories.

Contents



Introduction

Carbon County is located by the counties of Sanpete, Utah, Emery, Grand, Duchesne, and Uintah. In Carbon County there are about 245 farms in this County. About 17 percent of the farms are over 50 acres. These farms take up close to 20 percent of the acres in Carbon County. The total acreage of irrigated acres in this county is 10,685.

The annual precipitation that falls in Carbon County, which is the primary County in this District, is right around 9.68 inches per year. Even though the elevations are fairly high we are still considered a semi-desert climate due to the timing of the precipitation.

General Land Use Observations

Grass / Pasture / Hay Lands

- Complications related to overgrazing include poor pasture condition, soil compaction and water quality issues.
- Control of noxious and invasive plants is an ever increasing problem.
- The small, part-time farms are less likely to adopt conservation due to cost and low farm income.

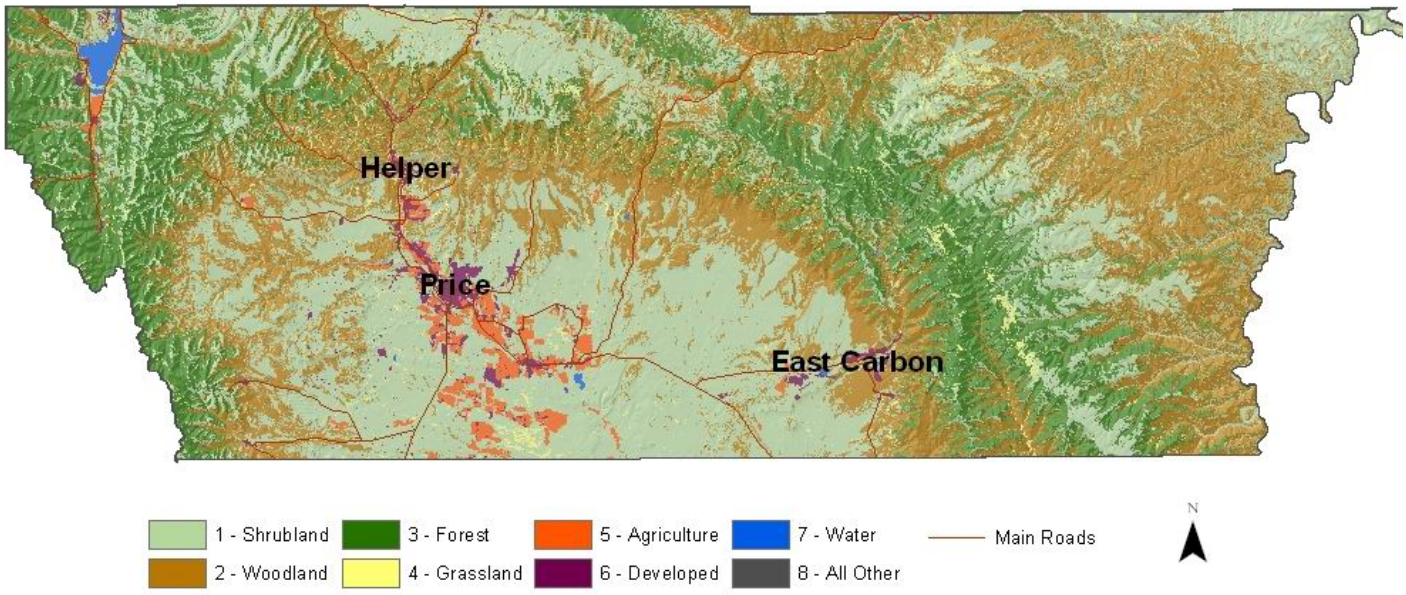
Forest

- Carbon County Commissioners passed a Timber Harvest Ordinance, in 2000, the first of its kind in Utah.

Resource Assessment Summary

Categories	Concern high, medium, or low	Description and Specific Location (quantify where possible)
Soil	medium	Sheet and Rill, Ephemeral Gully, Classic Gully, Streambank
Water Quantity	high	Excessive Runoff, Flooding, or Ponding, Inefficient Water Use on Irrigated Land
Water Quality Ground Water	medium	Excessive Salinity in Groundwater
Water Quality Surface Water	high	Excessive Salinity in Surface Water, Water Quality – Colorado River Excessive Salinity
Air Quality	low	No real concerns
Plant Suitability	low	Plants not adapted or suited
Plant Condition	low	Recent Drought has caused lower productivity in desireable species and an increse in undesireable species.
Fish and Wildlife	medium	Habitat replacement in salinity areas
Domestic Animals	low	Inadequate Quantities and Quality of Feed and Forage
Social and Economic	low	Urban Encroachment on Agricultural Land, Full Time vs Part Time Agricultural Communities

Land Use/Land Cover



Land Cover/Land Use	Acres	%
Forest	5530	10%
Grain Crops	550	1%
Grass/Pasture/Haylands	15500	27%
Orchards/Vineyards	10	0%
Shrub/Rangelands	23169	40%
Developed	9670	17%
Water	2800	5%
Carbon County Totals *b	57229	100%

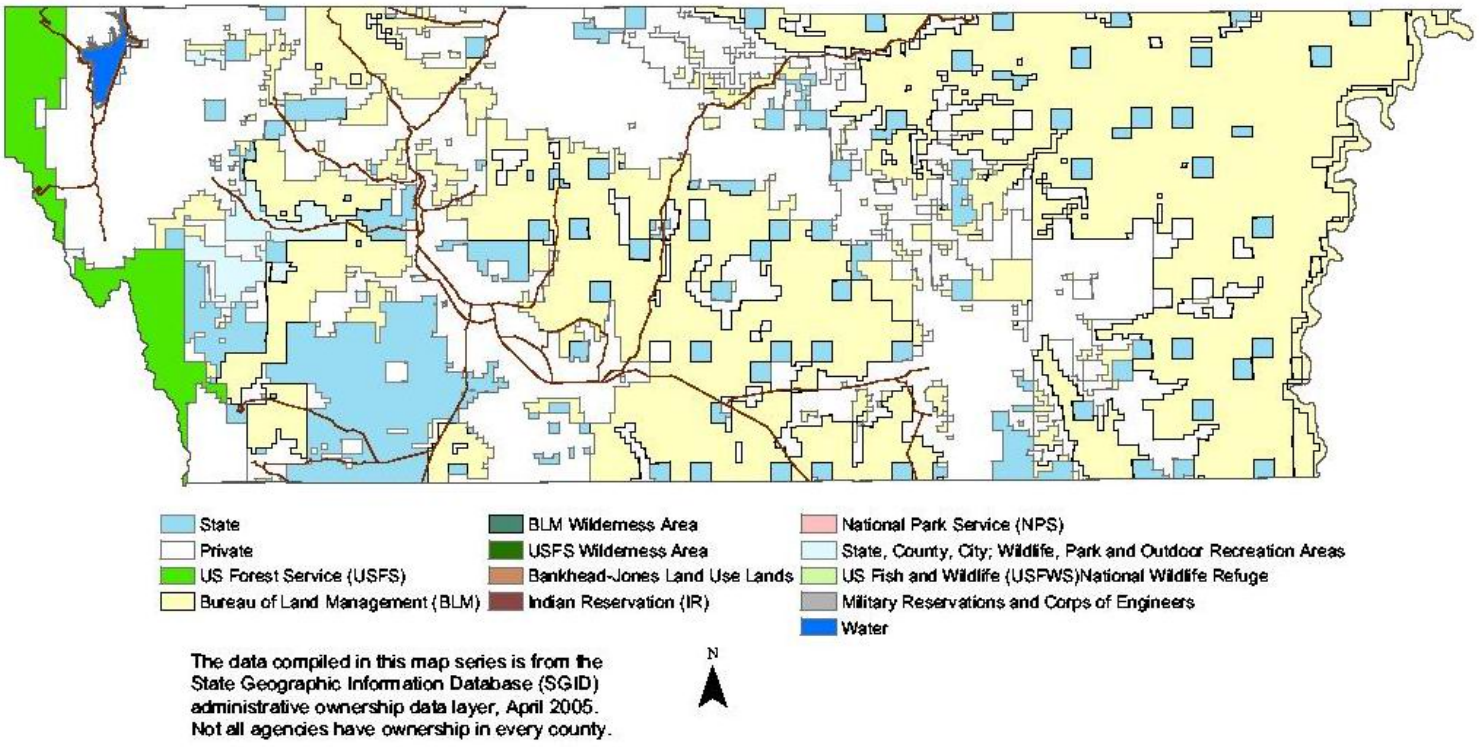
***a**: Estimate from Farm Service Agency records and include CRP/CREP. **b**: Totals may not add due to rounding and small unknown acreages.*

Special Considerations for Carbon County:

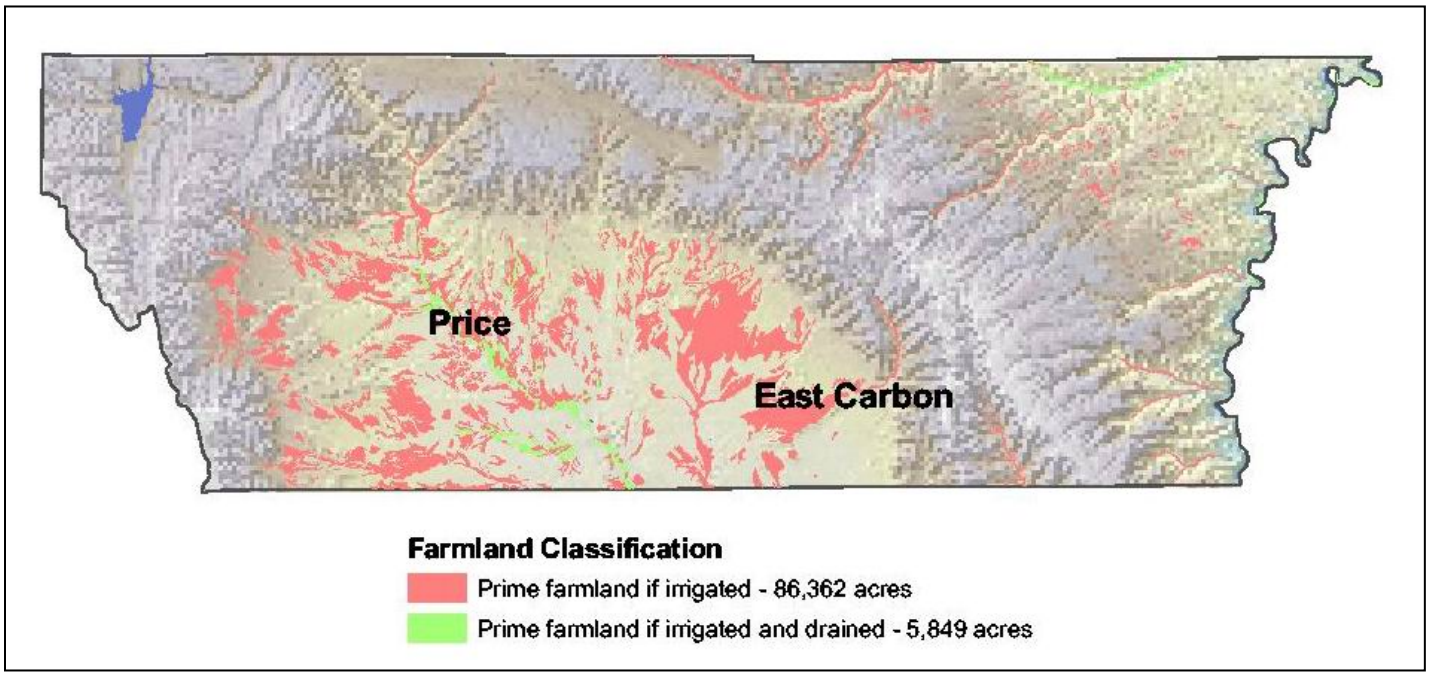
There are 5,530 acres under negotiation for projects in Carbon County

- About seventeen percent of the farms are less than 50 acres in size.
- There is about 10 Orchards/Vineyards/Nurseries in the whole county.
- Grass/Pasture/Hay includes approximately:
  - 392 acres of small grain hay
  - 23169 acres of rangeland (source)
- Row crops include a variety of field and vegetable crops grown for the cannery processing and fresh market.
- There are approximately 4,990 acres of hay.

Ownership



Prime & Unique Farm Land



Prime farmland

Land that has the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, oilseed, and other agricultural crops with minimum inputs of fuel, fertilizer, pesticides, and labor, and without intolerable soil erosion.

Unique farmland

Land other than prime farmland that is used for the production of specific high-value food and fiber crops...such as, citrus, tree nuts, olives, cranberries, fruits, and vegetables.

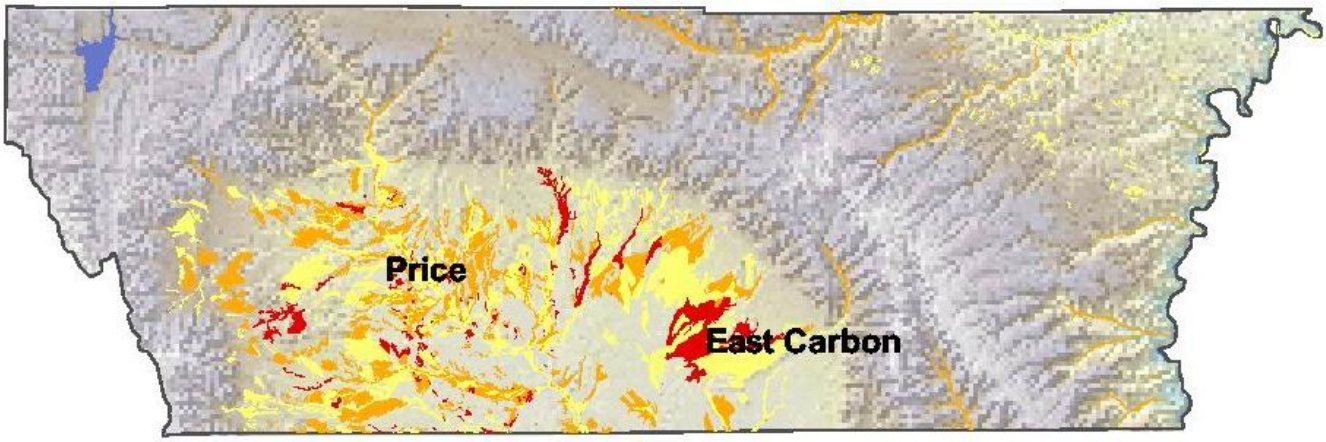
Additional farmland of statewide or local importance

Land identified by state or local agencies for agricultural use, but not of national significance.

Resource Concerns – SOILS

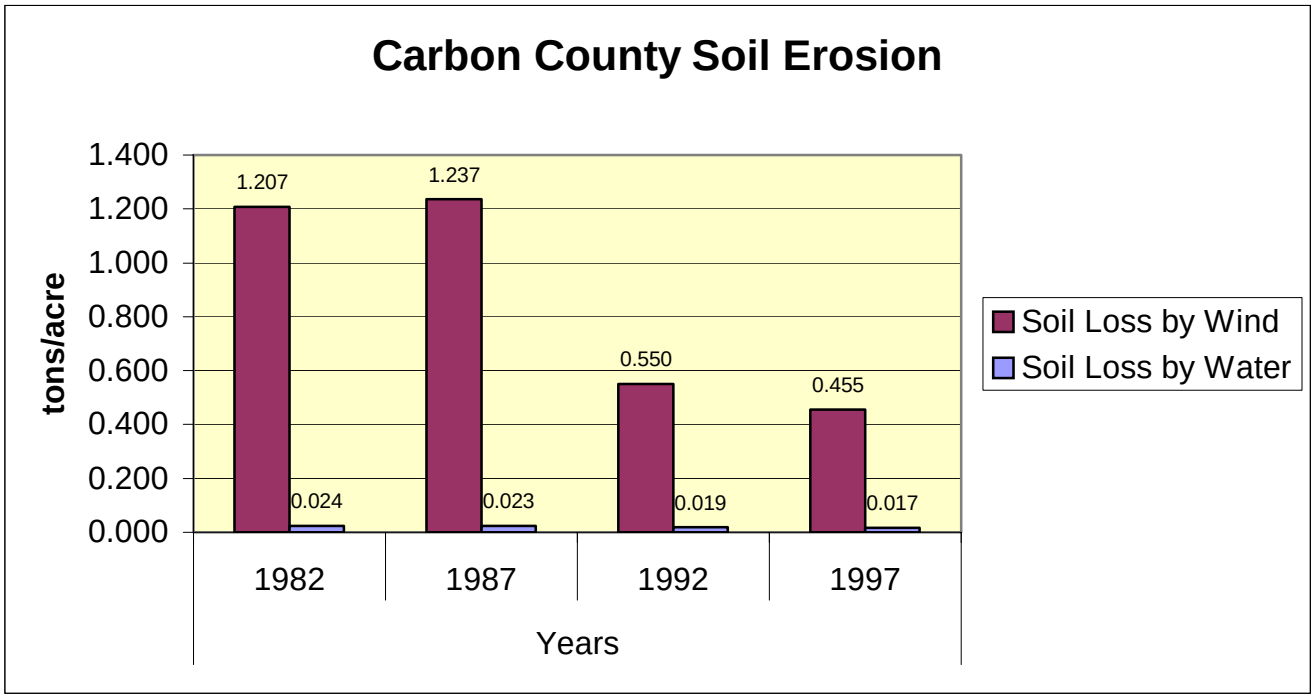
Categories	Specific Resource Concern / Issue	Crop	Hay	Pasture	Grazed Range	Grazed Forest	Pasture Native/Naturalized	Wildlife	Watershed Protection	Forest	Headquarters	Urban	Recreation	Water	Mined	Natural Area
Soil Erosion	Sheet and Rill	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Wind															
	Ephemeral Gully	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Classic Gully	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Streambank	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Shoreline	x	x	x												
	Irrigation-induced				x	x	x			x						x
	Mass Movement															
	Road, roadsides and Construction Sites															
Soil Condition	Organic Matter Depletion	x	x													
	Rangeland Site Stability				x	x										
	Compaction															
	Subsidence															
	ContaminantsSalts and Other Chemicals	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Contaminants: Animal Waste and Other OrganicsN															
	Contaminants: Animal Waste and Other OrganicsP															
	Contaminants: Animal Waste and Other OrganicsK															
	Contaminants : Commercial FertilizerN															
	Contaminants : Commercial FertilizerP															
	Contaminants : Commercial FertilizerK															
	ContaminantsResidual Pesticides															
	Damage from Sediment Deposition															

Land Capability Class on Cropland and Pastureland



		Acres	Percentage
Land Capability Class (Irrigated Cropland & Pastureland Only)	**I** - slight limitations	0	0%
	II - moderate limitations	55,809	48%
	III - severe limitations	46,873	41%
	IV - very severe limitations	12,566	11%
	V - no erosion hazard, but other limitations	0	0%
	VI - severe limitations, unsuited for cultivation, limited to pasture, range, forest	0	0%
	VII - very severe limitations, unsuited for cultivation, limited to grazing, forest, wildlife	0	0%
	VIII - misc areas have limitations, limited to recreation, wildlife, and water supply	0	0%

Soil Erosion



- Sheet and rill erosion by water on the subbasin croplands and pasturelands have been reduced by.79 tons of soil per acre from 1982 to 1997.
- NRI estimates indicate 1,400 acres of the sub basin agricultural lands still had water erosion rates above a sustainable level in 1997.
- Controlling erosion not only sustains the long-term productivity of the land, but also affects the amount of soil, pesticides, fertilizer, and other substances that move into the nation's waters.
- Through NRCS programs many farmers and ranchers have applied conservation practices to reduce the effects of erosion by water. As a result, erosion rates on croplands and pasturelands fell from 0.024 to 0.017 tons/acre/year from 1987 to 1997.

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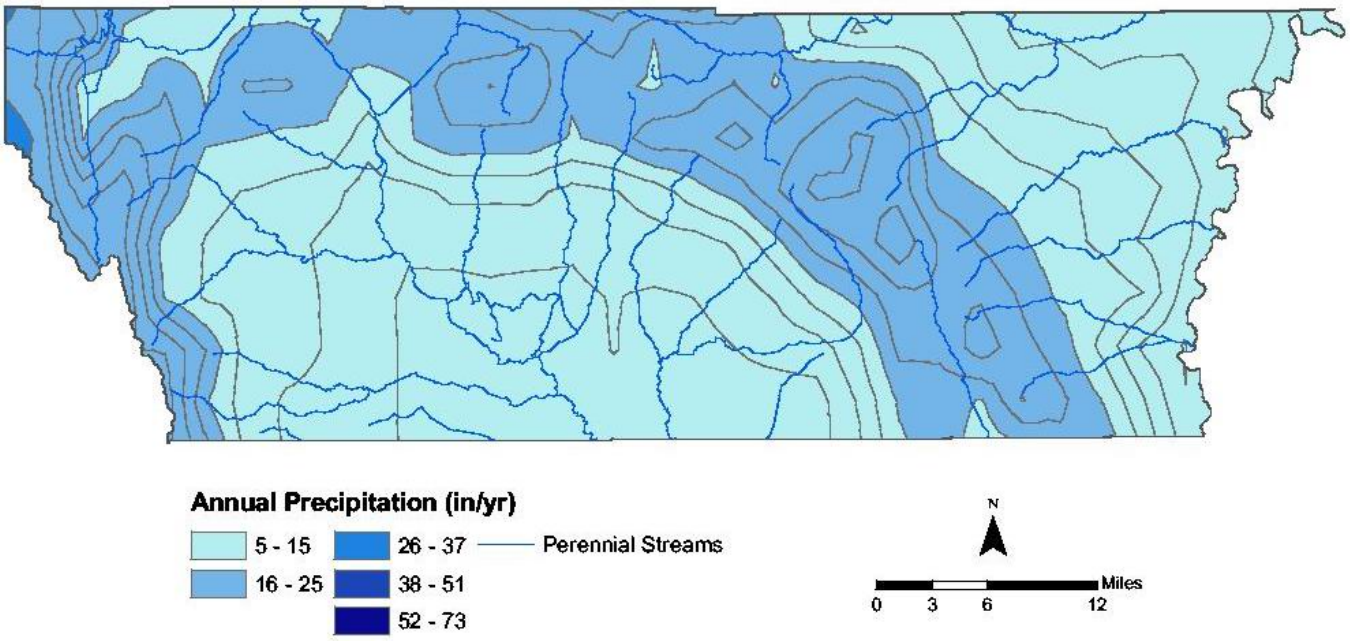
Resource Concerns – WATER

Categories	Specific Resource Concern / Issue	Crop	Hay	Pasture	Grazed Range	Grazed Forest	Pasture Native/Naturalized	Wildlife	Watershed Protection	Forest	Headquarters	Urban	Recreation	Water	Mined	Natural Area
Water Quantity	Water Quantity – Rangeland Hydrologic Cycle															
	Excessive Seepage															
	Excessive Runoff, Flooding, or Ponding	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Excessive Subsurface Water															
	Drifted Snow															
	Inadequate Outlets															
	Inefficient Water Use on Irrigated Land	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Inefficient Water Use on Non-irrigated Land															
	Reduced Capacity of Conveyances by Sediment Deposition	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Reduced Storage of Water Bodies by Sediment Accumulation					x	x		x					x	x	x
	Aquifer Overdraft															
	Insufficient Flows in Watercourses															
Water Quality, Groundwater	Harmful Levels of Pesticides in Groundwater															
	Excessive Nutrients and Organics in Groundwater															
	Excessive Salinity in Groundwater	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Harmful Levels of Heavy Metals in Groundwater															
	Harmful Levels of Pathogens in Groundwater															
	Harmful Levels of Petroleum in Groundwater															
Water Quality, Surface	Harmful Levels of Pesticides in Surface Water															
	Excessive Nutrients and Organics in Surface Water															
	Excessive Suspended Sediment and Turbidity in Surface Water															
	Excessive Salinity in Surface Water	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Water Quality – Colorado River Excessive Salinity	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Harmful Levels of Heavy Metals in Surface Water															
	Harmful Temperatures of Surface Water															
	Harmful Levels of Pathogens in Surface Water															
	Harmful Levels of Petroleum in Surface Water															

Precipitation and Streams



		ACRES	ACRE-FEET
Irrigated Adjudicated Water Rights	Surface	16300.00	65200.00
	Total **Irrigated Adjudicated Water Rights**	16300.00	65200.00
Stream Flow Data	**USGS 14922834 Fish Creek near** Heiner	Total Avg. Yield	506
		May-Sept Yield	34,736
		MILES	PERCENT
Stream Data	Total **Miles - Major (100K Hydro GIS Layer)**	**1934.00**	**n/a**
	303d (DEQ Water Quality Limited Streams)	109.00	6%

	Irrigation Efficiency:	<40%	40 - 60%	>60%
Percentage of Total Acreage	Cropland	65%	25%	10%
	Pastureland	65%	30%	5%

Watersheds & Total Maximum Daily Load (TMDL)

Watershed Projects, Plans, Studies and Assessments			
NRCS Watershed Projects		NRCS Watershed Plans, Studies & Assessments	
Name	Status	Name	Status
Price River, San Rafel River	Under Way	Price-San Rafeal Rivers Unit FEIS	Completed
DEQ TMDL's		NRCS Comprehensive Nutrient Management Plans	
Name	Status	Number	Status
	EPA Approved - 2004	2	Planned Implemented

AFO/CAFO

Animal Feeding Operations (AFO)						
Animal Type	Dairy	Feed Lot (Cattle)	Poultry	Swine	Sheep	Horses
No. of Farms	6	14	4	7	8	11
No. of Animals						

Potential Confined Animal Feeding Operations (PCAFO)						
Animal Type	Dairy	Feed Lot (Cattle)	Poultry	Swine	Sheep	Horses
No. of Farms	2	7	0	0	0	1
No. of Animals						

Confined Animal Feeding Operations - Utah CAFO Permit					
Animal Type	Dairy	Feed Lot (Cattle)	Poultry	Swine	Sheep
No. of Permitted Farms	0	0	0	0	0
No. of Permitted Animals					

Resource Concerns – AIR, PLANTS, ANIMALS

Categories	Specific Resource Concern / Issue	Crop	Hay	Pasture	Grazed Range	Grazed Forest	Pasture Native/Naturalized	Wildlife	Watershed Protection	Forest	Headquarters	Urban	Recreation	Water	Mined	Natural Area
Air Quality	Particulate matter less than 10 micrometers in diameter (PM 10)															
	Particulate matter less than 2.5 micrometers in diameter (PM 2.5)															
	Excessive Ozone															
	Excessive Greenhouse Gas: CO2 (carbon dioxide)															
	Excessive Greenhouse Gas: N2O (nitrous oxide)															
	Excessive Greenhouse Gas: CH4 (methane)															
	Ammonia (NH3)															
	Chemical Drift															
	Objectionable Odors															
	Reduced Visibility															
	Undesirable Air Movement															
	Adverse Air Temperature															
Plant Suitability	Plants not adapted or suited															
Plant Condition	Plant Condition – Productivity, Health and Vigor															
	Threatened or Endangered Plant Species: Plant Species Listed or Proposed for Listing under the Endangered Species Act															
	Threatened or Endangered Plant Species: Declining Species, Species of Concern															
	Noxious and Invasive Plants															
	Forage Quality and Palatability															
	Plant Condition – Wildfire Hazard															
Fish and Wildlife	Inadequate Food															
	Inadequate Cover/Shelter															
	Inadequate Water				X	X										
	Inadequate Space															
	Habitat Fragmentation				X	X										
	Imbalance Among and Within Populations															
	Threatened and Endangered Species: Species Listed or Proposed for Listing under the Endangered Species Act															
Domestic Animals	Inadequate Quantities and Quality of Feed and Forage				X	X										
	Inadequate Shelter															
	Inadequate Stock Water				X	X										
	Stress and Mortality															

Noxious Weeds

Utah Noxious Weed List

The following weeds are officially designated and published as noxious for the State of Utah, as per the authority vested in the Commissioner of Agriculture under Section 4-17-3, Utah Noxious Weed Act:

- Bermudagrass** (Cynodon dactylon)
- Canada thistle (Cirsium arvense)
- Diffuse knapweed (Centaurea diffusa)
- Dyers woad (Isatis tinctoria L)
- Field bindweed (Wild Morning Glory) (Convolvulus arvensis)
- Hoary cress (Cardaria drabe)
- Johnsongrass (Sorghum halepense)
- Leafy spurge (Euphorbia esula)
- Medusahead (Taeniatherum caput-medusae)
- Musk thistle (Carduus mutans)
- Perennial pepperweed (Lepidium latifolium)
- Perennial sorghum (Sorghum halepense L & Sorghum almum)
- Purple loosestrife (Lythrum salicaria L.)
- Quackgrass (Agropyron repens)
- Russian knapweed (Centaurea repens)
- Scotch thistle (Onopordum acanthium)
- Spotted knapweed (Centaurea maculosa)
- Squarrose knapweed (Centaurea squarrosa)
- Yellow starthistle (Centaurea solstitialis)

Additional noxious weeds declared by Carbon County (2003): Russian olive

Wildlife

The Utah Comprehensive Wildlife Conservation Strategy (CWCS) prioritizes native animal species according to conservation need. At-risk and declining species in need of conservation were identified by examining species biology and life history, populations, distribution, and threats. The following table lists species of greatest conservation concern in the county.

AT-RISK SPECIES				
	Common Name	**Group**	**Primary Habitat**	**Secondary Habitat**
FEDERALLY-LISTED				
Endangered:	Black-footed Ferret (extirpated)	Mammal	Grassland	High Desert Scrub
	Bonytail Chub	Fish	Water - Lotic	
	Colorado Pikeminnow	Fish	Water - Lotic	
	Humpback Chub	Fish	Water - Lotic	
	Razorback Sucker	Fish	Water - Lotic	
Threatened:	Mexican Spotted Owl	Bird	Cliff	Lowland Riparian
	Bald Eagle	Bird	Lowland Riparian	Agriculture
Candidate:	Yellow-billed Cuckoo	Bird	Lowland Riparian	Agriculture
Proposed:	(None)			
STATE SENSITIVE				
Conservation Agreement Species:	Northern Goshawk	Bird	Mixed Conifer	Aspen
	Bluehead Sucker	Fish	Water - Lotic	Mountain Riparian
	Bonneville Cutthroat Trout	Fish	Water - Lotic	Mountain Riparian
	Roundtail Chub	Fish	Water - Lotic	
	Flannelmouth Sucker	Fish	Water - Lotic	
Species of Concern:	Burrowing Owl	Bird	High Desert Scrub	Grassland
	Ferruginous Hawk	Bird	Pinyon-Juniper	Shrubsteppe
	Greater Sage-grouse	Bird	Shrubsteppe	
	Kit Fox	Mammal	High Desert Scrub	
	Long-billed Curlew	Bird	Grassland	Agriculture
	Smooth Greensnake	Reptile	Mountain Riparian	Wet Meadow
	Townsend's Big-eared Bat	Mammal	Pinyon-Juniper	Mountain Shrub
	Western Red Bat	Mammal	Lowland Riparian	
	Western Toad	Amphibian	Wetland	Mountain Riparian
	White-tailed Prairie-dog	Mammal	Grassland	High Desert Scrub

*Definitions of habitat categories can be found in the Utah Comprehensive Wildlife Conservation Strategy.

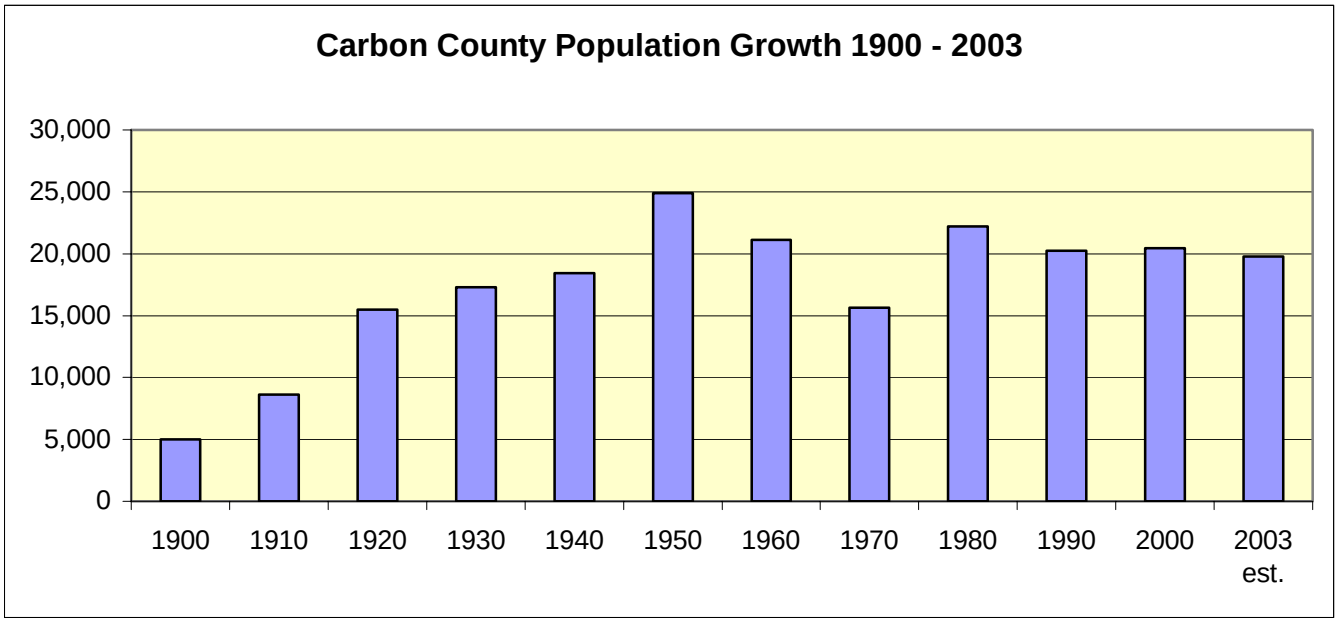
The Utah CWCS also prioritizes habitat categories based on several criteria important to the species of greatest conservation need. The top ten hey habitats state-wide are (in order of priority):

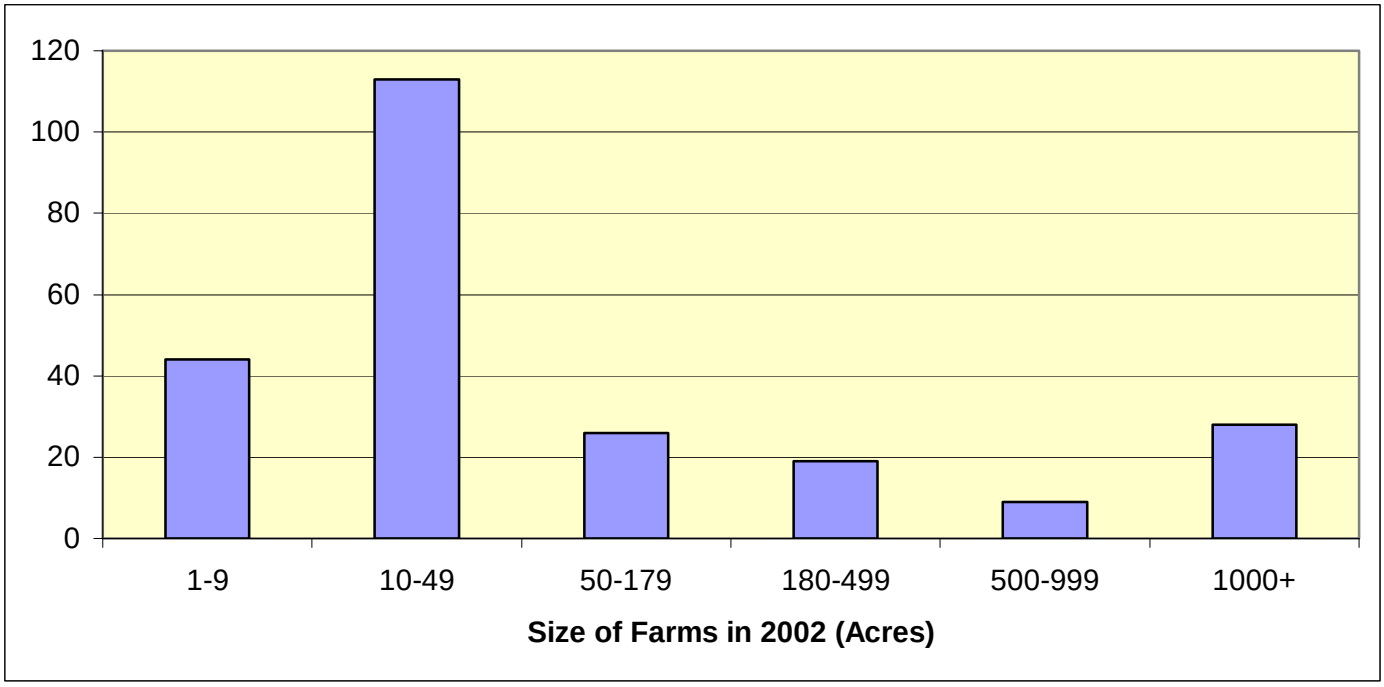
1) **Lowland Riparian** (riparian areas <5,500 ft elevation; principal vegetation: Fremont cottonwood and willow)
2) **Wetland** (marsh <5,500 ft elevation; principal vegetation: cattail, bulrush, and sedge)
3) **Mountain Riparian** (riparian areas >5,500 ft elevation; principal vegetation: narrowleaf cottonwood, willow, alder, birch and dogwood)
4) **Shrubsteppe** (shrubland at 2,500 - 11,500 ft elevation; principal vegetation: sagebrush and perennial grasses)
5) **Mountain Shrub** (deciduous shrubland at 3,300 - 9,800 ft elevation; principal vegetation: mountain mahogany, cliff rose, bitterbrush, serviceberry, etc.)
6) **Water - Lotic** (open water; streams and rivers)
7) **Wet Meadow** (water saturated meadows at 3,300 - 9,800 ft elevation; principal vegetation: sedges, rushes, grasses and forbs)
8) **Grassland** (perennial and annual grasslands or herbaceous dry meadows at 2,200 - 9,000 ft elevation)
9) **Water - Lentic** (open water; lakes and reservoirs)
10) **Aspen** (deciduous aspen forest at 5,600 - 10,500 ft elevation)

Resource Concerns – SOCIAL AND ECONOMIC

Categories	Specific Resource Concern / Issue	Crop	Hay	Pasture	Grazed Range	Grazed Forest	Pasture Native/Naturalized	Wildlife	Watershed Protection	Forest	Headquarters	Urban	Recreation	Water	Mined	Natural Area
Social and Economic	Non-Traditional Landowners and Tenants															
	Urban Encroachment on Agricultural Land	X	X	X												
	Marketing of Resource Products															
	Innovation Needs															
	Non-Traditional Land Uses															
	Population Demographics, Changes and Trends															
	Special Considerations for Land Mangement (High State and Federal Percentage)															
	Active Resource Groups (CRMs, etc)															
	Full Time vs Part Time Agricultural Communities	X	X	X												
	Size of Operating Units															
	Land Removed from Production through Easments															
	Land Removed from Production through USDA Programs															
Other																

Census and Social Data





Number of Farms: 243

Number of Operators:

- Full-Time Operators: 100
- Part-Time Operators: 143

Public Survey/Questionnaire Results:

As of June 15, 2005

- Soil Erosion
- Brush Control
- Noxious Weeds & Trees
- Water Quality
- Salt Control
- Watershed Protection Development
- Water Quantity (irrigation efficiency)
- Streambank Restoration
- Sage Grouse Habitat
- Improve Ag Marketing
- Storm Runoff (Erosion)
- Economic Development
- 14 Different needs
- Additional Water Storage – Lower Basin
- Urban Influence in Rural Areas
- Ag Protection Areas

Footnotes / Bibliography

1. General information about Davis County obtained from the official Davis County website: http://www.co.davis.ut.us/discoverdavis/

2. Location and land ownership maps made using GIS shapefiles from the Automated Geographical Reference Center (AGRC), a Utah State Division of Information Technology. Website: http://agrc.utah.gov/

3. Land Use/Land Cover layer developed by the Utah Department of Water Resources. A polygon coverage containing water-related land-use for all 2003 agricultural areas of the state of Utah. Compiled from initial USGS 7.5 minute Digital Raster Graphic waterbodies, individual farming fields and associated areas are digitized from Digital Orthophotos, then surveyed for their land use, crop type, irrigation method, and associated attributes.

4. Prime and Unique farmlands derived from SURGO Soils Survey UT607 and Soil Data Viewer. Definitions of Prime and Unique farmlands from U.S. Geological Survey, http://water.usgs.gov/eap/env_guide/farmland.html#HDR5

5. Land Capability Classes derived from SURGO Soils Survey UT607 and Soil Data Viewer.

6. Tons of Soil Loss by Water Erosion data gathered from National Resource Inventory (NRI) data. Estimates from the 1997 NRI Database (revised December 2000) replace all previous reports and estimates. Comparisons made using data published for the 1982, 1987, or 1992 NRI may produce erroneous results. This is due to changes in statistical estimation protocols, and because all data collected prior to 1997 were simultaneously reviewed (edited) as 1997 NRI data were collected. In addition, this December 2000 revision of the 1997 NRI data updates information relesed in December 1999 and corrects a computer error discovered in March 2000. For more information: http://www.nrcs.usda.gov/technical/NRI/

7. Precipitation data was developed by the Oregon Climate Service at Oregon State University using average monthly or annual precipitation from 1960 to 1990. Publication date: 1998. Data was downloaded from the Resource Data Gateway, http://dgateway-wb01.lighthouse.itc.nrcs.usda.gov/lighthouse

8. Irrigated Adjudicated Water Rights obtained from the Utah Division of Water Rights.

9. Stream Flow data from

10. Stream length data calculated using ArcMap and 100k stream data from AGRC and 303d waters from the Utah Department of Environmental Quality.

11. Watershed information from

12. The 2003 noxious weed list was obtained from the State of Utah Department of Food and Agriculture. For more information contact Steve Burningham, 801-538-7181 or visit their website at http://ag.utah.gov/plantind/noxious_weeds.html

13. Wildlife information derived from the Utah Division of Wildlife Resources' Comprehensive Wildlife Conservation Strategy (CWCS) (http://wildlife.utah.gov/cwcs/) and from the Utah Conservation Data Center (http://dwrcdc.nr.utah.gov/ucdc/).

14. County population data from the U.S. Census Bureau, Utah Quick Facts, http://quickfacts.census.gov/qfd/states/49000.html

15. Farm information obtained from the National Agricultural Statistics Service, 2002 Census of Agriculture. http://www.nass.usda.gov/census/census02/volume1/index2.htm